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ABSTRACT

Method and apparatus providing connection-oriented services for packet switched data communications networks. Directory services include distributed discovery of MAC addresses and protocol alias addresses. Topology services include a link state topology exchange among switches, which provides each switch with a complete topology graph of the network. This enables an access switch receiving a data packet to determine a complete path from a source end system to a destination end system. Another service includes resolution of broadcast frames to unicast frames, in order to reduce the amount of broadcast traffic. Policy restrictions may be applied prior to connection setup. Path determination services enable multiple paths from a source to a destination. Connection management includes source routed mapping of connections on the desired path. A distributed call rerouting service is provided wherein if a link on an active path fails, each switch receives a topology change notification and unmaps any connection involving the failed link. A broadcast/unknown service provides restricted flooding of nonresolvable packets. Furthermore, connection-oriented switching is provided based on the source and destination MAC addresses as a connection identifier. Still further, resolution of networks outside the switch domain is enabled by access switches listening for network and server route advertisements and maintaining best routes to said networks and servers. The best route metrics may be combined with best path metrics to determine a path from a first access switch to an egress switch connected to the external network.